

Notice of Allowability

Application No.

10/653,300

Examiner

Christian A. Hannon

Applicant(s)

WU ET AL.

Art Unit

2618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 10/11/2006.
2. ☒ The allowed claim(s) is/are 1-14.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

REASONS FOR ALLOWANCE

1. Claims 1-14 are allowed over the cited prior art.
2. The following is an examiner's statement of reasons for allowance:

Regarding claim 1, Mogre et al (US 6,122,325) disclose a method and system for detecting and correcting I/Q imbalance in receivers however Mogre et al fail to explicitly teach a method for I/Q mismatch calibration of a receiver having an I/Q correction module which performs $x_{o[n]} = A_{p} \cdot x_{i[n]} + B_{p} \cdot x_{i[n]}^*$ where $x_{i[n]}$ and $x_{o[n]}$ respectively represent the input and output signal of the I/Q correction module, the superscript * refers to a complex conjugate, and A_{p} and B_{p} are correction parameters, comprising the following steps: generating a test signal $x(t)$ containing a single tone waveform with frequency of $(f_{c} + f_{T})$ Hz, where f_{c} and f_{T} are real numbers; applying I/Q demodulation to reduce the central frequency of the test signal $x(t)$ by f_{c} Hz and output a demodulated signal $x_{dem}(t)$; converting the demodulated signal $x_{dem}(t)$ to a digital signal $x_{dem}[n]$; obtaining measures U_{1} and U_{2} of the digital signal $x_{dem}[n]$ where U_{1} and U_{2} are values indicative of the frequency response of $x_{dem}(t)$ at frequency $+f_{T}$ Hz and $-f_{T}$ Hz, respectively; and calculating the set of the correction parameters A_{p} and B_{p} for the I/Q correction module based on the measures U_{1} and U_{2} .

In regards to claim 8 Mogre et al disclose a method and system for detecting and correcting I/Q imbalance in receivers however Mogre et al fail to explicitly teach An

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apparatus for I/Q mismatch calibration of a receiver having an I/Q correction module which performs $x_{\text{sub.o}}[n] = A_{\text{sub.p}} \cdot x_{\text{sub.i}}[n] + B_{\text{sub.p}} \cdot x_{\text{sub.i}}^*[n]$ where $x_{\text{sub.i}}[n]$ and $x_{\text{sub.o}}[n]$ respectively represent the input and output signal of the I/Q correction module, the superscript * refers to a complex conjugate, and $A_{\text{sub.p}}$ and $B_{\text{sub.p}}$ are correction parameters, comprising: a signal generator for generating a test signal $x(t)$ which contains a single tone waveform with frequency of $(f_{\text{sub.c}} + f_{\text{sub.T}})$ Hz, where $f_{\text{sub.c}}$ and $f_{\text{sub.T}}$ are real numbers; a demodulator for applying I/Q demodulation to reduce the central frequency of the test signal $x(t)$ by $f_{\text{sub.c}}$ Hz and outputting a demodulated signal $x_{\text{sub.dem}}(t)$; A/D converters for converting the demodulated signal $x_{\text{sub.dem}}(t)$ to a digital signal $x_{\text{sub.dem}}[n]$; a dual-tone correlator for obtaining measures $U_{\text{sub.1}}$ and $U_{\text{sub.2}}$ of the digital signal $x_{\text{sub.dem}}[n]$ output from the I/Q correction module where $U_{\text{sub.1}}$ and $U_{\text{sub.2}}$ are values indicative of the frequency response of $x_{\text{sub.dem}}(t)$ at frequency $+f_{\text{sub.T}}$ Hz and $-f_{\text{sub.T}}$ Hz, respectively; and a processor for obtaining the set of the correction parameters $A_{\text{sub.p}}$ and $B_{\text{sub.p}}$ according to the measures $U_{\text{sub.1}}$ and $U_{\text{sub.2}}$.

Claims 2-7 are allowed as they depend from allowable claim 1.

Claims 9-14 are allowed as they depend from allowable claim 8.


Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian A. Hannon whose telephone number is (571) 272-7385. The examiner can normally be reached on Mon. - Fri. 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on (571) 272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Christian A. Hannon
October 26, 2006

 10/27/06
QUOCHIEN B. VUONG
PRIMARY EXAMINER